BULLETIN LIRC 99-02

DATE: **April 21, 1999**

TO: **ALL PROPERTY AND CASUALTY INSURANCE COMPANIES**

RE: **Computer Model Interrogatories**

Actuarial Standards of Practice set forth principals and considerations for an actuary estimating costs associated with the transfer of risk. Of particular relevance are principles 1, 2, and 3 from Actuarial Standard of Practice No. 9:

> *Principle 1: A rate is an estimate of the expected value of future costs.*
>
> *Principle 2: A rate provides for all costs associated with the transfer of risk.*
>
> *Principle 3: A rate provides for the costs associated with an individual risk transfer.*

These three principles, when followed, should lead to property rates which are reasonable, not excessive, not inadequate, and not unfairly discriminatory.

Louisiana statutes allow for the consideration of a wide variety of data and analysis methods when establishing property premiums. LRS. 22:1404(1) states, in part, that …

> *All rates shall be made in accordance with the following provisions:*
>
> *(1) Due consideration shall be given to past and prospective loss experience within and outside this state, to catastrophe hazards, if any, … and to all other relevant factors within and outside this state.*

The Louisiana Insurance Rating Commission (LIRC) recognizes that the "catastrophe hazard" is significant in Louisiana and that "due consideration" implies that accurate, sound actuarial analysis must underly the costing of property premiums. The LIRC expects insurers will utilize the most accurate, reliable, and reasonable methods available to estimate Louisiana property premiums.

Modeling is an actuarial tool available to all property insurance companies. Specifically, modeling addresses the difficulties inherent in catastrophe pricing, particularly for the hurricane component. Difficulties faced by the actuary include predictability of low frequency, high severity events and lack of relevant historical data. Modeling is a recognized tool in the costing of property insurance, costing of reinsurance treaties, and managing an insurer's coastal exposure.

Though modeling may improve the accuracy and stability of catastrophe cost estimations, the LIRC recognizes that catastrophe modeling is not a perfect science and estimates from one model to another, or one company to another, may vary significantly. Catastrophe models are complex computer algorithms used to represent the catastrophic phenomena and require expertise in the actuarial, engineering, meteorological, and computer sciences. As such, these models are not easily understood and are difficult to benchmark against established norms. The term "black

box" has been used to describe a model's inner-workings. This Bulletin is designed to identify and document what goes on within this "black box" as it relates to Louisiana property ratemaking. Each insurance company that files a rate that includes a provision generated by a catastrophe model must provide information about the model, its input, its output, and how the output was used to produce the proposed rates. This information will allow the LIRC to see how individual insurers use a model's output in proposed Louisiana property premiums, compare models across vendors at any point in time, and, as a model from a single vendor evolves, monitor the import of model revisions.

LRS 22:1407.A gives the LIRC authority to require an insurer or rating organization to provide relevant information and data necessary to determine whether a filing meets the requirements of Part XXX of the Louisiana Insurance Code. To expedite the review of a filing which utilizes computer modeling, the LIRC is advising insurers and insurance rating organizations of the information which it needs to make a determination as to whether said filing meets the requirements of Louisiana statutes and can be approved, i.e., modeled rates are reasonable, adequate, not excessive, and not unfairly discriminatory. Since the amount of information needed is lengthy, please follow the instructions carefully. In the event that there is insufficient room on the form, attach separate sheets.

These forms should be used only when modeled loss provisions are included in the filed rates.

- **Sections Insurer Certificate and Insurance Information of Part A must be completed by an insurer or insurance rating organization <u>when any type of computer modeling is used to support filed rates for any peril</u>.**

- **Section Modeled Provision in the Rates of Part A and all Sections of Part B must be completed <u>when computer modeling supports the hurricane provision in the filed rates</u>. If a model only supports non-hurricane perils, these forms do not need to be completed.**

- **If a company is <u>filing to adopt loss costs</u> which include modeled loss provisions (hurricane or any other peril), <u>completion of Part A and Part B forms is not required.</u>**

The following table summarizes the filing requirements by Part and Section:

Part and Section	When to File?
Part A - Insurer Certification	File when rates are supported by a model for any type of peril
Part A - Insurer Information	File when rates are supported by a model for any type of peril
Part A - Modeled Provision in the Rates	File only when rates are supported by a model for the hurricane peril
Part B - Modeler Certification	File only when rates are supported by a model for the hurricane peril
Part B - Model Evaluation	File only when rates are supported by a model for the hurricane peril
Part B - Model Validation	File only when rates are supported by a model for the hurricane peril
Part B - Model Sensitivity	File only when rates are supported by a model for the hurricane peril

In this Bulletin, a "model release" means a version of the model that contains any change from the immediately preceding model version on file with the LIRC. Changes include but are not limited to revision of source code, revisions of required and optional model input, revision of model formulas, a "bug" fix, report format revisions, model enhancements, model tuning, or similar additions, deletions and enhancements to model features, performance, or accuracy.

For a given model release, if the above forms and related exhibits have been previously filed with the LIRC, an insurance company using that release of the model may refer to the modeler's forms and exhibits already on file and does not have to resubmit them with their filing packet. In this case, the company should clearly identify the model release and state that these forms and exhibits are on file with the LIRC.

If more than one model was used by an insurer to set rates, all modelers responsible for the models utilized must submit Part B of the Interrogatories.

To expedite the filing process, a modeler may pre-file Part B of these Interrogatories so that they are on file with the LIRC and immediately available to an insurer.

Pursuant to LRS 22:1407.A.(2)(e), a filing and all information pertaining thereto is public record and open to inspection. If any of the information requested by this Bulletin is considered confidential by the insurance company or the modeler, these Interrogatories may be submitted under separate cover and not as part of filing packet. Clearly label all confidential material as such. The LIRC will work with the company or modeler to resolve any confidentiality issues.

Use of these forms is not mandatory but submission of the information in such a format will expedite the review process. Regardless of the format used, sufficient information must be provided to allow the LIRC to determine if the filing is in compliance with LRS 22, Part XXX. If data cannot be provided in the formats requested, the LIRC will work with the company to determine whether an alternate format will be acceptable.

Note that providing completed Interrogatories and the inclusion of model output in approved rates for an insurance company is not an "approval" of a specific model. LIRC approval of filed rates which include support from a model is merely approval of the filed rates and should not be construed as approval of the supporting model.

This Bulletin is not a directive, regulation, or rule. This Bulletin is issued by the LIRC to provide assistance to insurers filing rates with the LIRC and using catastrophe models to support proposed Louisiana property rates.

If you have questions regarding this Bulletin, please contact Richard Piazza (225-342-4690).

_____

CHRIS FASER, III
Deputy Commissioner/LIRC

LOUISIANA INSURANCE RATING COMMISSION
COMPUTER MODEL INTERROGATORIES
PART A
INSURER CERTIFICATION

Instructions: This section should be completed by the insurer and must accompany a rate filing that contains rates based, in whole or in part, on any type of computer modeling.

Type or print, except where signature is requested.

I, _____, hereby certify that I am the
(PRINT NAME)

_____ of _____ doing business
(PRINT TITLE) **(PRINT INSURANCE COMPANY)**

in the state of Louisiana and that I am authorized to make this certificate. I hereby certify that responses to the Louisiana Insurance Rating Commission's Computer Model Interrogatories, Part A are true and correct to the best of my knowledge.

This is the _____ day of _____, _____.
(NUMBER) **(MONTH)** **(YEAR)**

_____
(SIGNATURE)

_____
(ADDRESS)

_____
(CITY, STATE, ZIP CODE)

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

INSURER INFORMATION

Instructions: This section should be completed by the insurer and must accompany a rate filing that contains rates based, in whole or in part, on any type of computer modeling.

1. Filing reference for which modeled output is used:

   Company(ies): _____

   Line and/or Sub-Lines: _____

   Filing Identifier: _____

2. Whose model(s) did you use in this filing (check all that apply)?

   ☐ AIR ☐ RMS
   ☐ Tillinghast ☐ EQE
   ☐ Impact Forecasting ☐ Other: _____

3. Which model release did you use in this filing?

   Model A: Name: _____ Release Reference: _____

   Model B: Name: _____ Release Reference: _____

   Model C: Name: _____ Release Reference: _____

4. If more than one model was used in this rate filing, explain how their combined output was used to establish Louisiana insurance rates. _____

   _____

   _____

   _____

   _____

   _____

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

INSURER INFORMATION

5. Provide a contact in your company familiar with each model used.

Model A:	Contact:	_____	Phone:	_____
	Company:	_____	Fax No.:	_____
Model B:	Contact:	_____	Phone:	_____
	Company:	_____	Fax No.:	_____
Model C:	Contact:	_____	Phone:	_____
	Company:	_____	Fax No.:	_____

6. In this rate filing, for which peril(s) is model output used to establish Louisiana insurance premiums? (Check all that apply)

Model A:	☐ Hurricane	☐ Hail
	☐ Non-hurricane wind	☐ Flood
	☐ Earthquake	☐ Water
	☐ Fire	☐ Other: _____
Model B:	☐ Hurricane	☐ Hail
	☐ Non-hurricane wind	☐ Flood
	☐ Earthquake	☐ Water
	☐ Fire	☐ Other: _____
Model C:	☐ Hurricane	☐ Hail
	☐ Non-hurricane wind	☐ Flood
	☐ Earthquake	☐ Water
	☐ Fire	☐ Other: _____

7. Did you run the model internally or did the modeler run it for you?

Model A:	☐ Ran Internally	☐ Modeler Ran
Model B:	☐ Ran Internally	☐ Modeler Ran
Model C:	☐ Ran Internally	☐ Modeler Ran

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

INSURER INFORMATION

8. The following will help identify data used as input to the model:

Model A: a. □Yes □No Was exposure data specific to the company making this filing provided by the company as input to the model?

b. □Yes □No Was exposure data, other than data specific to the company making this filing, provided by the company as input to the model?

If your answer above to Model A, 8.a or 8.b was "yes", continue with i. through iii.

i. What type of data was supplied and at what date of evaluation? (Check all that apply)

("IF" is in-force; "AY" is accident year; "CY" is calendar year; and, "PY" is policy year)

Exposure data: □IF □PY □CY □Other: _____ for _____ @ ___/____/____
YEAR(S) MM / DD / YY

Expense data: □AY □PY □CY □Other: _____ for _____ @ ___/____/____
YEAR(S) MM / DD / YY

Loss data: □AY □PY □CY □Other: _____ for _____ @ ___/____/____
YEAR(S) MM / DD / YY

Describe any other company specific data provided as input to the model: _____

_____

_____

ii. □Address
□Zip Code
□Parish
□Geo-Code
□Other: _____

At what geographic level of detail was the exposure data? (Select all that apply)

iii. □Yes □No Was company supplied data, used as input to the model, projected to a future policy period?

If "yes", data was projected to: ___/___/___
MM/ DD / YY

If "yes", the annualized percentage used for projection was: _____%

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

INSURER INFORMATION

c. If your answer to Model A, 8.a and 8.b were "no", describe the data used to generate model estimates for your company: _____

_____

_____

_____

d. ☐No Was model output projected to a future policy period before incorporating into your rates?

If "yes", output was projected to: ___/___/___
MM/ DD / YY

If "yes", the annualized percentage used for projection was: _____%

Model B: a. ☐Yes ☐No Was exposure data specific to the company making this filing provided by the company as input to the model?

b. ☐Yes ☐No Was exposure data, other than data specific to the company making this filing, provided by the company as input to the model?

If your answer above to Model B, 8.a or 8.b was "yes", continue with i. through iii.

i. What type of data was supplied and at what date of evaluation? (Check all that apply)

("IF" is in-force; "AY" is accident year; "CY" is calendar year; and, "PY" is policy year)

Exposure data: ☐IF ☐PY ☐CY ☐Other: _____ for _____ @ ___/___/___
YEAR(S) MM / DD / YY

Expense data: ☐AY ☐PY ☐CY ☐Other: _____ for _____ @ ___/___/___
YEAR(S) MM / DD / YY

Loss data: ☐AY ☐PY ☐CY ☐Other: _____ for _____ @ ___/___/___
YEAR(S) MM / DD / YY

Describe any other company specific data provided as input to the model: _____

_____

_____

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

INSURER INFORMATION

ii. ☐Address
☐Zip Code
☐Parish
☐Geo-Code
☐Other: _____

At what geographic level of detail was the exposure data? (Select all that apply)

iii. ☐Yes ☐No Was company supplies data, used as input to the model, projected to a future policy period?

If "yes", data was projected to: ___/___/___
MM/ DD / YY

If "yes", the annualized percentage used for projection was: _____%

c. If your answer to Model B, 8.a and 8.b were "no", describe the data used to generate model estimates for your company: _____

_____

_____

_____

d. ☐Yes ☐No Was model output projected to a future policy period before incorporating into your rates?

If "yes", output was projected to: ___/___/___
MM/ DD / YY

If "yes", the annualized percentage used for projection was: _____%

Model C: a. ☐Yes ☐No Was exposure data specific to the company making this filing provided by the company as input to the model?

b. ☐Yes ☐No Was exposure data, other than data specific to the company making this filing, provided by the company as input to the model?

If your answer above to Model C, 8.a or 8.b was "yes", continue with i. through iii.

i. What type of data was supplied and at what date of evaluation? (Check all that apply)

("IF" is in-force; "AY" is accident year; "CY" is calendar year; and, "PY" is policy year)

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

INSURER INFORMATION

Exposure data: □IF □PY □CY □Other: _____ for _____ @ ___/____/____
YEAR(S) MM / DD / YY

Expense data: □AY □PY □CY □Other: _____ for _____ @ ___/____/____
YEAR(S) MM / DD / YY

Loss data: □AY □PY □CY □Other: _____ for _____ @ ___/____/____
YEAR(S) MM / DD / YY

Describe any other company specific data provided as input to the model: _____

_____

_____

ii. □Address
□Zip Code
□Parish
□Geo-Code
□Other: _____

At what geographic level of detail was the exposure data? (Select all that apply)

iii. □Yes □No

Was company supplied data, used as input to the model, projected to a future policy period?

If "yes", data was projected to: ___/___/___
MM/ DD / YY

If "yes", the annualized percentage used for projection was: _____%

c. If your answer to Model C, 8.a and 8.b were "no", describe the data used to generate model estimates for your company: _____

_____

_____

_____

d. □Yes □No

Was model output projected to a future policy period before incorporating into your rates?

If "yes", output was projected to: ___/___/___
MM/ DD / YY

If "yes", the annualized percentage used for projection was: _____%

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

MODELED PROVISION IN THE RATES

Instructions: This section should be completed by the insurer. This section applies only to a filing that includes modeled hurricane and related loss.

1. Describe how modeled hurricane loss was translated into company specific insurance premiums.

_____

_____

_____

_____

_____

_____

_____

_____

2. If your hurricane catastrophe provision varies by territory, describe how this provision was determined by territory. _____

_____

_____

_____

_____

_____

_____

3. Provide a proposed premium breakdown by territory using the report format of Exhibits A.1 through A.4. If more than one sub-line of business (e.g., homeowners, renters, and condominium) is included in the filing, complete Exhibits A.1 through A.4 for each sub-line. Attach territory definitions, if needed.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART A

MODELED PROVISION IN THE RATES

4. ☐Yes ☐No Does the hurricane catastrophe provision in the proposed rates vary by a variable other than territory, for example, deductible or amount of insurance?

   a. If "yes," provide a breakdown of that variable using the report format of Exhibits A.1 through A.4. If more than one sub-line of business (e.g., homeowners, renters, and condominium) is included in the filing, complete Exhibits A.1 through A.4 for each sub-line.

   b. Describe how the hurricane catastrophe provision is determined for this variable.

   _____

   _____

   _____

   _____

5. Provide the company's Louisiana historical catastrophe loss experience in the format of Exhibit B. Include as many years as are available. If insured value is not known, state such.

   If more than one sub-line of business (e.g., homeowners, renters, and condominium) is covered by the filing, complete Exhibit B for each sub-line. If sub-line cannot be stated separately, clearly document that the historical data is for all sub-lines combined.

LOUISIANA INSURANCE RATING COMMISSION
COMPUTER MODEL INTERROGATORIES
PART B
MODELER CERTIFICATION

Instructions: This section should be completed by the modeler and must accompany a rate filing that contains rates based, in whole or in part, on computer modeling. This section applies only to a model estimating hurricane and related loss.

Type or print except where signature is requested.

I, _____, hereby certify that I am the
(PRINT NAME)

_____ of _____ and that I am authorized
(PRINT TITLE) **(PRINT MODEL COMPANY)**

to make this certificate. I hereby certify that responses to the Louisiana Insurance Rating Commission's Computer Model Interrogatories, Part B are true and correct to the best of my knowledge.

The model for which this certificate applies is identified as:

Name of Model: _____

Model Release Reference: _____

Date of Model Release or Last Revised: ____/_____/_____
MM DD YY

This is the _____ day of _____, _____.
(NUMBER) **(MONTH)** **(YEAR)**

_____
(SIGNATURE)

_____
(ADDRESS)

_____
(CITY, STATE, ZIP CODE)

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

Instructions: This section should be completed by the modeler. This section applies only to a model estimating hurricane and related loss. This model is known as:

Modeler: _____
Name of Model: _____
Model Release Reference: _____
Date of Model Release or Last Revised: _____/_____/_____
MM DD YY

1. ☐Constant ☐Can Be Altered — Are model formulas and parameters the same for all clients or can these be altered depending on client need?

   If they can vary by client, explain the manner of variation. _____
   _____
   _____

2. The following interrogatories explore whether the model is capable of addressing and adjusting loss estimates for specific insurance considerations. A "yes" response does not mean that a specific model run actually adjusted for the item but does mean that the model could have, if requested, adjusted for the item.

   For interrogatories 2.a through 2.jj, is the hurricane model capable of adjusting estimated hurricane loss because of...

   a. ☐Yes ☐No — Distribution differences among your client's property policy forms and endorsements?

   b. ☐Yes ☐No — The specific impact of a client's policy deductible distribution?

   c. ☐Yes ☐No — The specific impact of a client's amount of insurance distribution?

   d. ☐Yes ☐No — The effect on a client's expected losses due to existing or proposed reinsurance contracts?

   e. ☐Yes ☐No — Multi-story structures?

   f. ☐Yes ☐No — Coverage differences for various types of homeowner policy forms?

   g. ☐Yes ☐No — Cash value policy form?

   h. ☐Yes ☐No — Condominium policy forms?

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

i. □Yes □No Renter policy forms?

j. □Yes □No Mobile home policy forms?

k. □Yes □No The fire extended coverage endorsement?

l. □Yes □No Commercial property policy forms?

m. □Yes □No Businessowners policy forms?

n. □Yes □No Farmowners policy forms?

o. □Yes □No Flood loss covered by the National Flood Insurance Program?

p. □Yes □No Personal inland marine policy forms, floaters, endorsements, or schedules?

q. □Yes □No Commercial inland marine policy forms, floaters, endorsements, or schedules?

r. □Yes □No Boat policy forms?

s. □Yes □No Personal automobile policy forms?

t. □Yes □No Commercial automobile policy forms?

u. □Yes □No Appurtenant structure loss?

v. □Yes □No Contents loss?

w. □Yes □No Additional living expense loss?

x. □Yes □No Business interruption loss?

y. □Yes □No Policy deductibles?

z. □Yes □No Replacement cost policy provisions? If "yes", explain how this is handled in the model. _____
_____
_____

aa. □Yes □No The quality of existing construction in a geographic area, current building codes, or building code enforcement?

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

bb. □Yes □No Loss attributable to underinsured structures?

cc. □Yes □No Loss attributable to overinsured structures?

dd. □Yes □No Loss attributable to uninsured structures?

ee. □Yes □No Loss attributable to public structures?

ff. □Yes □No Loss attributable to industry pools, e.g., FAIR Plan, Coastal Plan, or other pooling arrangements?

gg. □Yes □No Non-property loss, e.g., liability, life, health, workers' compensation?

hh. □Yes □No The impact of any loss mitigation measures, e.g. installation of hurricane shutters or mobile home tie-downs?

ii. □Yes □No Demand surge, i.e., an increase in construction costs due to temporary increased demand for limited construction resources?

jj. □Yes □No Risk, e.g., a load based on loss variance or the need to attract risk capital?

3. □Yes □No Is your client's actual exposure used in the determination of modeled loss costs? If "no" explain the source of exposure underlying modeled output.

_____
_____
_____

4. □Yes □No Does the model project exposure data to a future policy period?

____ / ____ / ____ If "yes", to what period was data projected?
MM / DD / YY

If "yes", explain how this projection is made.

_____
_____
_____
_____

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

5. ☐Yes ☐No Does the model project loss or expense data to a future policy period?

____ / ____ / ____ If "yes", to what period was data projected?
MM / DD / YY

If "yes", explain how this projection is made. _____
_____
_____
_____
_____

6. ☐Yes ☐No Does the model produce a confidence interval for loss costs? If "yes", explain how this interval is calculated. _____
_____
_____

7. ☐Yes ☐No Does the model output include loss attributable to the impact of subsequent, non-catastrophe, sequential damage, e.g. due to post-catastrophe wind, rain, or theft?

8. ☐ALAE
☐ULAE
☐All LAE
☐NONE
Does model output include provisions for any loss adjustment expense?
(Check only one)

9. ☐Address
☐Zip Code
☐Parish
☐Geo-Code
☐Other: _____
At what geographic level of detail is the model capable of distinguishing an exposure's location?
(Check all that apply)

10. ☐Monthly
☐Annually
☐Other: _____
How frequently is your zip code database updated?

11. ☐Geo-weighted
☐Population-weighted
☐Other: _____
How is a zip code centroid determined?

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

12. Provide loss estimates for the sample exposure set defined in Exhibits C.1 and C.2 given the scenario hurricanes listed in Exhibit D. Use Exhibits E.1, E.2, and E.3 as the report format. The report format allows for model output comparisons across varied structure types in controlled geographic locations and with controlled storm parameters. Loss estimates should be for the primary exposure and all secondary insured exposures.

    Sixty (60) risks are defined in Exhibit C. Nine (9) hurricanes are defined in Exhibit D, which specifies certain storm parameters for those events. Explain any defaults or assumptions made if this data is not the same as your model expects.

    Report Exhibits E.1 through E.3 data in hardcopy and on 3½ diskette (or CD-ROM) using the standard format described in Appendix A.

13. Provide the following:

    a. Loss estimates by Louisiana zip code for a Homeowners policy with a $100,000 frame exposure (includes $100,000 building, $50,000 contents, $20,000 time, $250 deductible and $10,000 for appurtenant structures) given scenario hurricanes 1, 4, and 7 listed in Exhibit D. Use the format of Exhibit F to display the modeled losses by zip code. Assume this <u>one</u> Homeowner exposure is in every Louisiana zip code. Loss estimates are for the combined primary exposure and all secondary insured exposure.

        Report Exhibit F data in hardcopy and on 3½ diskette (or CD-ROM) using the standard format described in Appendix A.

        The modeler should use the latest zip code definitions database available.

        i. What is the source of the modeler's zip code definition database? _____

        ii. How often does the modeler update the zip code definition database?
        - ☐ Monthly
        - ☐ Annually
        - ☐ Other: _____

    b. Graphically display loss estimates by zip code separately for hurricane scenarios 1, 4, and 7 using the following legend. In the legend, the percents reflect estimated loss for the exposure (structure plus related coverages as specified above) divided by the building exposure (e.g., $100,000). Color display is preferred but, if color is not possible, use the shadings indicated.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

COLOR	SHADING	Percent Modeled Loss to Building's Insured Value
White		No damage (0%)
Light Yellow		More than 0% but less than 1%
Light Blue		At least 1% but less than 2%
Medium Orange		At least 2% but less than 4%
Dark Red		At least 4% or greater

14. For as many years as available, provide listings of historical hurricanes which .....

    a. Had a Louisiana coastal landfall.

    b. Caused property loss in Louisiana but whose landfall was not coastal Louisiana.

    Display these hurricanes using the format of Exhibit G.1 and G.2.

15. Provide storm parameters for the eleven (11) historical hurricanes named in Exhibit H using the format of Exhibit H.

16. Provide modeled property loss estimates for the historical hurricanes listed in Exhibit H using the following exposure bases:

    a. The modeler's all industry, all lines countrywide property exposure database. Use Exhibits I.1 through I.3 to display the modeled results.

    b. The following Louisiana standardized property exposure database:

TYPE	CONSTRUCTION	BUILDING	CONTENTS	TIME	DEDUCTIBLE	APPURTENANT STRUCTURE
HO	Frame	$100,000	50,000	20,000	250	10,000
HO	Frame	$200,000	100,000	40,000	250	20,000
HO	Brick	$100,000	50,000	20,000	250	10,000
MH	N.A.	$ 30,000	15,000	6,000	250	3,000
CP	Ordinary	$200,000	100,000	50,000	1,000	20,000
CP	Wind-resistive	$400,000	200,000	100,000	1,000	40,000
CO	Brick – 4-story	0	50,000	20,000	250	0
RE	Brick – 2-story	0	20,000	5,000	250	0

The TYPES are: "HO" is a Homeowner policy; "MH" is a Mobile Home policy; "CP" is a Commercial Multi-Peril Property policy; "CO" is a Condominium policy; "RE" is a Renters policy.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODELER EVALUATION

Assume that only these exposures are in each zip code in each state affected by the storms defined by Exhibit H. Use Exhibits I.4 through I.6 to display modeled results.

Report Exhibits I.1 though I.6 data in hardcopy and on 3½ diskette (or CD-ROM) using the standard format described in Appendix A.

17. Provide a list and a description of model variables and outputs for your model. Indicate which of these variables are critical to model output. Indicate what assumptions are made, if any, relating to any model variable listed. In describing the variables, state which are qualitative and which are quantitative.

Model Variable: _____ □Critical □Qualitative □Quantitative

Assumptions: _____

_____

Model Variable: _____ □Critical □Qualitative □Quantitative

Assumptions: _____

_____

Model Variable: _____ □Critical □Qualitative □Quantitative

Assumptions: _____

_____

18. Explain how the model handles a single hurricane with multiple landfalls, e.g., Hurricane Andrew:

_____

_____

_____

_____

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODEL VALIDATION

Instructions: This section should be completed by the modeler. This section applies only to the model estimating hurricane and related loss. This model is known as:

Modeler: _____

Name of Model: _____

Model Release Reference: _____

Date of Model Release or Last Revised: _____/_____/_____
MM DD YY

1. Provide an overview of model operation. _____

_____

_____

2. A model is a commercial software application. As such, please respond to the following:

a. ☐Yes ☐No ☐Does not apply — Has a "requirement document" been written for this model?

b. ☐Yes ☐No ☐Does not apply — Has a "specification document" been written for this model?

c. ☐Yes ☐No ☐Does not apply — Has a "user's guide" been published to aid clients in using or running this model?

d. ☐Yes ☐No ☐Does not apply — Has a "test specification" been written for this model?

e. ☐Yes ☐No ☐Does not apply — Has the model's software code been tested?

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODEL VALIDATION

f. ☐Yes ☐No Have the model's internal calculations been validated?

If your answer above was "yes", continue with i through iii below.

i. Explain how the model was tested and validated. _____

_____

_____

ii. ☐Yes ☐No Were Louisiana property exposures part of the validation process?

iii. ☐Yes ☐No Were storms with Louisiana landfall part of the validation process?

g. ☐Yes ☐No Have revisions or corrections to the model's software code been made since the model was first made available to your clients?

If "yes", continue with i through iv below.

i. Explain the process by which model revisions or corrections are identified, reported, and coded. _____

_____

ii. Explain how revised releases of the model are released to clients?_____

_____

iii. Explain how a client would recognize which model release produced specific model output. _____

_____

iv. Provide the historical release and revision summary for the model since its first release to clients. Use the report format of Exhibit J.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODEL VALIDATION

h. _____ In what year was the model first used for ratemaking?
(YEAR)

i. ☐Yes ☐No Has the model been reviewed by any other state insurance department?

If "yes", list the states and the reviewer.

STATE	REVIEWER
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

3. List the names of your technical staff and indicate their years of experience with modeling as used in ratemaking. Use the format of Exhibit K or similar profiles.

4. ☐Yes ☐No Has the model been independently peer reviewed? If available, provide documentation of the most recent two peer reviews.

   ☐Yes ☐No Are there any unresolved or outstanding issues resulting from these reviews? Please explain each.

5. Provide the following individuals who have reviewed or have knowledge of your model:

   a. Independent Meteorologist Name: _____ Phone: _____

   Experience: _____

   b. Independent Engineer Name: _____ Phone: _____

   Experience:
   _____

   c. Independent Actuary Name: _____ Phone: _____

   Experience: _____

d. Other: _____ Name: _____ Phone: _____

Experience: _____

e. Other: _____ Name: _____ Phone: _____

Experience: _____

6. Describe the methodology used for these model components:

a. Storm track _____

☐Yes ☐No Does the model include a provision for storm tract curvature?

b. Wind Generation _____

c. Damage determination _____

d. The loss calculation _____

e. Decay rate (filling-rate) _____

f. Effects of land friction _____

7. Provide the sources for these model components:

a. Storm track _____

b. Wind Generation _____

c. Damage determination _____

d. The loss calculation _____

e. Decay rate (filling-rate) _____

f. Effects of land friction _____

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODEL VALIDATION

8. Name the sources for these input parameters:

   a. Central Pressures _____

   b. Radius of maximum wind _____

   c. Forward speed _____

   d. Probability of landfall _____

   e. Angle of incidence _____

   f. Other relevant parameters _____

   _____

   _____

9. For the following storm parameters, as they relate to Louisiana landfalls, provide summary data for model parameter values. If a specified parameter is not applicable to your model, explain and/or provide summary data for an appropriate surrogate parameter. Graphs of the data will be helpful.

   a. Table of central pressures, (or pressure differences). Use the format of Exhibit L.1.

      ☐Yes ☐No Does the model contain a minimum central pressure for a Louisiana landfall?

      If "yes", what is the minimum central pressure? _____mb

      ☐Yes ☐No Does the model contain a maximum central pressure for a Louisiana landfall?

      If "yes", what is the maximum central pressure? _____mb

   b. Table of radius of maximum winds. Use the format of Exhibit L.2.

      ☐Yes ☐No Does the model contain a minimum radius of maximum winds for a Louisiana landfall?

      If "yes", what is the minimum radius of maximum winds? _____miles

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODEL VALIDATION

□Yes □No Does the model contain a maximum radius of maximum winds for a Louisiana landfall?

If "yes", what is the maximum radius of maximum winds? _____miles

c. A table of forward speeds. Use the format of Exhibit L.3.

□Yes □No Does the model contain a minimum forward speed for a Louisiana landfall?

If "yes", what is the minimum forward speed? _____mph

□Yes □No Does the model contain a maximum forward speed for a Louisiana landfall?

If "yes", what is the maximum forward speed? _____mph

d. A table of decay rates (filling rate). In your model, if the decay rate is based on distance, assume a forward speed of 14 mph and translate to elapsed time. Use the format of Exhibit L.4.

e. Annual probabilities of landfall for modeled storms affecting Louisiana. The probabilities should be by Parish and by Saffir-Simpson classification (1 through 5). For landfall outside Louisiana, provide probabilities for landfall 100 miles east and 100 miles west of Louisiana's state lines separately. Display the results in the format of Exhibit L.5. In the event a hurricane has more than one landfall, for the purposes of this interrogatory, the hurricane should be assigned to only one Parish.

f. Annual frequency of historical storms affecting Louisiana. The distribution should be by coastal Parish and by Saffir-Simpson classification (1 through 5). For landfall outside Louisiana, provide an aggregate for landfall 100 miles east or west of Louisiana's state lines separately. Use the format of Exhibit L.6.

10. Provide modeled Louisiana all industry, all lines, loss statistics using the following exposure bases:

a. The modeler's all industry, all lines countrywide property exposure database. Estimated losses are for Louisiana only, regardless of landfall, and reflect all lines, all insured loss. Display in the format of Exhibit M.1, Tables 1 through 3.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B
MODEL VALIDATION

b. The Louisiana standardized property exposure database:

TYPE	CONSTRUCTION	BUILDING	CONTENTS	TIME	DEDUCTIBLE	APPURTENANT STRUCTURES
HO	Frame	$100,000	50,000	20,000	250	10,000
HO	Frame	$200,000	100,000	40,000	250	20,000
HO	Brick	$100,000	50,000	20,000	250	10,000
MH	N.A.	$ 30,000	15,000	6,000	250	3,000
CP	Ordinary	$200,000	100,000	50,000	1,000	20,000
CP	Wind-resistive	$400,000	200,000	100,000	1,000	40,000
CO	Brick – 4-story	0	50,000	20,000	250	0
RE	Brick – 2-story	0	20,000	5,000	250	0

The TYPES are: "HO" is a Homeowner policy; "MH" is a Mobile Home policy; "CP" is a Commercial Multi-Peril Property policy; "CO" is a Condominium policy; "RE" is a Renters policy.

When running the model, assume these exposures are in each Louisiana zip code. Display in the format of Exhibit M.2, Tables 1 through 3.

11. If modeled output was compared to actual historical losses, provide such comparison for five (5) recent storms. The five recent storms and breakdown by line are to be selected by the modeler. Provide only overall loss data by line of insurance. Display the results in the format of Exhibit N.

    a. Comment on reasons, if any, that modeled loss might differ significantly from actual historical loss.

    _____

    _____

    _____

    b. What is the source of actual historical losses used to validate the model? _____

    _____

    _____

    _____

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B
MODEL SENSITIVITY

Instructions: This section should be completed by the modeler. This section applies only to the model estimating hurricane and related loss. This model is know as:

Modeler: _____

Name of Model: _____

Model Release Reference: _____

Date of Model Release or Last Revised: _____/_____/_____
MM DD YY

The interrogatories in this section use the following Louisiana standardized exposure database as input to the model:

TYPE	CONSTRUCTION	BUILDING	CONTENTS	TIME	DEDUCTIBLE
HO	Frame	$100,000	50,000	20,000	250
HO	Frame	$200,000	100,000	40,000	250
HO	Brick	$100,000	50,000	20,000	250
MH	N.A.	$ 30,000	15,000	6,000	250
CP	Ordinary	$200,000	100,000	50,000	1,000
CP	Wind-resistive	$400,000	200,000	100,000	1,000
CO	Brick – 4-story	0	50,000	20,000	250
RE	Brick – 2-story	0	20,000	5,000	250

When running the model, assume these exposures are in each Louisiana zip code. Where comments or discussion of assumptions and estimates are appropriate, provide them on a separate sheet.

1. You have provided an overview of the distribution of modeled central pressures at landfall in Exhibit L.1.

a. Given this distribution as the base distribution and holding all other parameters constant, decrease the distribution by a factor of 10 mb, i.e., shift the distribution downward subject to model minimums, and display the resulting distribution in Exhibit O.1, Table 1. Display model results in the format of Exhibit O.1, Tables 2 and 3. The loss statistics calculated for Exhibit O.1, Tables 2 and 3 should be based on loss estimates for the state of Louisiana only.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

PART B

MODEL SENSITIVITY

b. Given this distribution as the base distribution and holding all other parameters constant, increase the distribution by a factor of 10 mb, i.e., shift the distribution upward subject to model maximums, and display the resulting distribution in Exhibit O.2, Table 1. Display model results in the format of Exhibit O.2, Tables 2 and 3. The loss statistics calculated for Exhibit O.2, Tables 2 and 3 should be based on loss estimates for the state of Louisiana only.

1. You have provided an overview of the distribution for radius of maximum winds as used by the model in Exhibit K.2.

   a. Given this distribution as the base distribution and holding all other parameters constant, decrease the distribution by a factor of 5 miles, i.e., shift the distribution downward subject to model minimums, and display the resulting distribution in Exhibit O.3, Table 1. Display model results in the format of Exhibit O.3, Table 2 and 3. The loss statistics calculated for Exhibit O.3, Tables 2 and 3 should be based on loss estimates for the state of Louisiana only.

   b. Given this distribution as the base distribution and holding all other parameters constant, increase the distribution by a factor of 5 miles, i.e., shift the distribution upward subject to model maximums, and display the resulting distribution in Exhibit O.4, Table 1. Display model results in the format of Exhibit O.4. The loss statistics calculated for Exhibit O.4, Tables 2 and 3 should be based on loss estimates for the state of Louisiana only.

1. You have provided an overview of the distribution for forward speed as used by the model in Exhibit K.3.

   a. Given this distribution as the base distribution and holding all other parameters constant, decrease the distribution by a factor of 5 mph, i.e. shift the distribution downward subject to model minimums, and display the resulting distribution in Exhibit O.5, Table 1. Display model results in the format of Exhibit O.5. The loss statistics calculated for Exhibit O.5, Tables 2 and 3 should be based on loss estimates for the state of Louisiana only.

   b. Given this distribution as the base distribution and holding all other parameters constant, increase the distribution by a factor of 5 mph, i.e., shift the distribution upward subject to model maximums, and display the resulting distribution in Exhibit O.6, Table 1. Display model results in the format of Exhibit O.6. The loss statistics calculated for Exhibit O.6, Tables 2 and 3 should be based on loss estimates for the state of Louisiana only.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT A.1

Breakdown of Proposed Premium

Line of Business:_____

(premiums reflect a _____ / _____ / _____ evaluation/projection)
MM DD YY

Territory (attach definitions) (1)	Proposed Premium (2)	Underwriting Expense Provision (3)		Contribution to Surplus and Earnings (4)		Loss & LAE Provision (5)	
		$	%	$	%	$	%
State Total							

NOTES: All percentages (%) are to the Proposed Premium, Column (2).
All estimates are gross of reinsurance.

Column	Comments
(1)	Provide detailed definition.
(2)	Proposed Premium is the expected average written premium for the territory. It includes all policy related fees and reflects all rating debits or credits. Column (2) equals Columns (3) + (4) + (5).
(3)	Underwriting Expense provision is that portion of Proposed Premium allocated to all operating expenses other than LAE. It includes anticipated dividends and all taxes, licenses and fees. This provision excludes the profit provision, anticipated investment earnings, and surplus contributions.
(4)	Contribution to Surplus and Earnings includes the profit provision and surplus contributions. This contribution can be zero or negative and should reflect anticipated investment earnings.
(5)	Loss & LAE Provision is that portion of Proposed Premium allocated to pure loss and loss adjustment expense. Exhibit A.1, Column (5), is the sum of Exhibits A.2 through A.4, Column (6).

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT A.2

Breakdown of Proposed Premium

Line of Business:_____

(premiums reflect a _____ / _____ / _____ evaluation/projection)
MM DD YY

Territory (attach definitions) (1)	Proposed Premium (2)	Hurricane Pure Loss Provision (3)		Hurricane Risk Load (4)		Hurricane LAE Provision (5)		Hurricane Loss & LAE (6)	
		$	%	$	%	$	%	$	%
State Total									

NOTES: All percentages (%) are to the Proposed Premium, Column (2).
All estimates are gross of reinsurance.

COLUMN	COMMENTS
(1)	Provide detailed definition.
(2)	Proposed Premium is the same as Column 2, Exhibit A.1.
(3)	Hurricane Pure Loss Provision is that portion of the Proposed Premium allocated to cover expected hurricane loss only. This provision excludes LAE and any risk load directly and uniquely associated with hurricane loss.
(4)	Hurricane Risk Load is that portion of the Proposed Premium covering any charge over and above the Hurricane Pure Loss Provision, including charges attributable to risk variance, uncertainty, or profit directly and uniquely associated with hurricane. This load excludes LAE.
(5)	Hurricane LAE Provision is that portion of the Proposed Premium allocated to cover all loss adjustment expenses associated with the Hurricane Pure Loss Provision.
(6)	Hurricane Loss & LAE equals columns (3) + (4) + (5).

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT A.3

Breakdown of Proposed Premium

Line of Business:_____

(premiums reflect a _____ / _____ / _____ evaluation/projection)
MM DD YY

Territory (attach definitions) (1)	Proposed Premium (2)	Non-Hurricane Catastrophe Pure Loss Provision (3)		Non-Hurricane Catastrophe Risk Load (4)		Non-Hurricane Catastrophe LAE Provision (5)		Non-Hurricane Catastrophe Loss & LAE (6)	
		$	%	$	%	$	%	$	%
State Total									

NOTES: All percentages (%) are to the Proposed Premium, Column (2).
All estimates are gross of reinsurance.

COLUMN	COMMENTS
(1)	Provide detailed definition.
(2)	Proposed Premium is the same as Column 2, Exhibit A.1.
(3)	Non-Hurricane Catastrophe Pure Loss Provision is that portion of the Proposed Premium allocated to cover expected non-hurricane catastrophe loss only. This provision excludes LAE and any risk load directly and uniquely associated with non-hurricane catastrophe loss.
(4)	Non-Hurricane Catastrophe Risk Load is that portion of the Proposed Premium covering any charge over and above the Non-Hurricane Catastrophe Pure Loss Provision, including charges attributable to risk variance, uncertainty, or profit directly and uniquely associated with non-hurricane catastrophes. This load excludes LAE.
(5)	Non-Hurricane Catastrophe LAE Provision is that portion of the Proposed Premium allocated to cover all loss adjustment expenses associated with the Non-Hurricane Catastrophe Pure Loss Provision.
(6)	Non-Hurricane Catastrophe Loss & LAE equals columns (3) + (4) + (5).

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT A.4

Breakdown of Proposed Premium

Line of Business:_____

(premiums reflect a _____ / _____ / _____ evaluation/projection)
MM DD YY

Territory (attach definitions) (1)	Proposed Premium (2)	Non-Catastrophe Pure Loss Provision (3)		Non-Catastrophe Risk Load (4)		Non-Catastrophe LAE Provision (5)		Non-Catastrophe Loss & LAE (6)	
		$	%	$	%	$	%	$	%
State Total									

NOTES: All percentages (%) are to the Proposed Premium, Column (2).
All estimates are gross of reinsurance.

COLUMN	COMMENTS
(1)	Provide detailed definition.
(2)	Proposed Premium is the same as Column 2, Exhibit A.1.
(3)	Non-Catastrophe Pure Loss Provision is that portion of the Proposed Premium allocated to cover expected non-catastrophe loss only. This provision excludes LAE and any risk load directly and uniquely associated with non-catastrophe loss.
(4)	Non-Catastrophe Risk Load is that portion of the Proposed Premium covering any charge over and above the Non-Catastrophe Pure Loss Provision, including charges attributable to risk variance, uncertainty, or profit. This load excludes LAE.
(5)	Non-Catastrophe LAE Provision is that portion of the Proposed Premium allocated to cover all loss adjustment expenses associated with the Non-Catastrophe Pure Loss Provision.
(6)	Non-Catastrophe Loss & LAE equals Columns (3) + (4) + (5).

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT B

Louisiana Historical Loss Experience

Line/Sub-line of Business:_____

Year	Total Insured Value	Total Incurred Loss	Hurricane Incurred Loss			Non-Hurricane Catastrophe Incurred Loss			Total Catastrophe Incurred Loss (Hurricane + Non-Hurricane)		
			Dollar	**Ratio #1**	**Ratio #2**	**Dollar**	**Ratio #1**	**Ratio #2**	**Dollar**	**Ratio #1**	**Ratio #2**
?											
?											
?											
?											
(as many											
years as											
available)											
?											
?											
?											
?											
TOTALS											
AVERAGE	n.a.	n.a.	n.a.			n.a.			n.a.		

NOTES: "Ratio #1" is loss dollars divided by Total Incurred Loss. Display up to four decimal places, e.g., .1723.
"Ratio #2" is loss dollars divided by Total Insured Value. Display up to four decimal places, e.g, .0239.
"Totals" values or losses are the sum of all values or losses across all years. "Totals" ratios are the total loss dollars divided by the Total Incurred Loss or Total Insured Value.
"Average" is the sum of all ratios across all years divided by the total number of years.

LOUISIANA INSURANCE RATING COMMISSION
COMPUTER MODEL INTERROGATORIES
EXHIBIT C.1
Sample Exposure Set

Zip Code	City	Latitude	Longitude	Policy Type	Building Construction	VALUE				
						Building	Contents	Time	Deductible	Appurtanent Structures
70122	New Orleans	30.010	90.063	HO	Frame – 100	100,000	50,000	20,000	250	10,000
70122	New Orleans	30.010	90.063	HO	Frame – 200	200,000	100,000	40,000	250	20,000
70122	New Orleans	30.010	90.063	HO	Brick	100,000	50,000	20,000	250	10,000
70122	New Orleans	30.010	90.063	MH	MH	30,000	15,000	6,000	250	3,000
70122	New Orleans	30.010	90.063	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
70122	New Orleans	30.010	90.063	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
70122	New Orleans	30.010	90.063	CO	Brick – 4-story	0	50,000	20,000	250	0
70122	New Orleans	30.010	90.063	RE	Brick – 2-story	0	20,000	5,000	250	0
70364	Houma	29.637	90.673	HO	Frame – 100	100,000	50,000	20,000	250	10,000
70364	Houma	29.637	90.673	HO	Frame – 200	200,000	100,000	40,000	250	20,000
70364	Houma	29.637	90.673	HO	Brick	100,000	50,000	20,000	250	10,000
70364	Houma	29.637	90.673	MH	MH	30,000	15,000	6,000	250	3,000
70364	Houma	29.637	90.673	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
70364	Houma	29.637	90.673	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
70364	Houma	29.637	90.673	CO	Brick – 4 story	0	50,000	20,000	250	0
70364	Houma	29.637	90.673	RE	Brick – 2 story	0	20,000	5,000	250	0
70506	Lafayette	30.196	92.081	HO	Frame – 100	100,000	50,000	20,000	250	10,000
70506	Lafayette	30.196	92.081	HO	Frame – 200	200,000	100,000	40,000	250	20,000
70506	Lafayette	30.196	92.081	HO	Brick	100,000	50,000	20,000	250	10,000
70506	Lafayette	30.196	92.081	MH	MH	30,000	15,000	6,000	250	3,000
70506	Lafayette	30.196	92.081	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
70506	Lafayette	30.196	92.081	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
70506	Lafayette	30.196	92.081	CO	Brick – 4 story	0	50,000	20,000	250	0
70506	Lafayette	30.196	92.081	RE	Brick – 2 story	0	20,000	5,000	250	0
70605	Lake Charles	30.116	93.216	HO	Frame – 100	100,000	50,000	20,000	250	10,000
70605	Lake Charles	30.116	93.216	HO	Frame – 200	200,000	100,000	40,000	250	20,000
70605	Lake Charles	30.116	93.216	HO	Brick	100,000	50,000	20,000	250	10,000
70605	Lake Charles	30.116	93.216	MH	MH	30,000	15,000	6,000	250	3,000
70605	Lake Charles	30.116	93.216	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
70605	Lake Charles	30.116	93.216	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
70605	Lake Charles	30.116	93.216	CO	Brick – 4 story	0	50,000	20,000	250	0
70605	Lake Charles	30.116	93.216	RE	Brick – 2 story	0	20,000	5,000	250	0
70808	Baton Rouge	30.406	91.145	HO	Frame – 100	100,000	50,000	20,000	250	10,000
70808	Baton Rouge	30.406	91.145	HO	Frame – 200	200,000	100,000	40,000	250	20,000
70808	Baton Rouge	30.406	91.145	HO	Brick	100,000	50,000	20,000	250	10,000
70808	Baton Rouge	30.406	91.145	MH	MH	30,000	15,000	6,000	250	3,000
70808	Baton Rouge	30.406	91.145	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
70808	Baton Rouge	30.406	91.145	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
70808	Baton Rouge	30.406	91.145	CO	Brick – 4 story	0	50,000	20,000	250	0
70808	Baton Rouge	30.406	91.145	RE	Brick – 2 story	0	20,000	5,000	250	0

NOTE: HO = Homeowners MH = Mobile Homeowners CP = Commercial Property CO = Condominium RE = Renters

LOUISIANA INSURANCE RATING COMMISSION
COMPUTER MODEL INTERROGATORIES
EXHIBIT C.2
Sample Exposure Set

Zip Code	City	Latitude	Longitude	Policy Type	Building Construction	VALUE				
						Building	Contents	Time	Deductible	Appurtanent Structures
71109	Shreveport	32.466	93.812	HO	Frame – 100	100,000	50,000	20,000	250	10,000
71109	Shreveport	32.466	93.812	HO	Frame – 200	200,000	100,000	40,000	250	20,000
71109	Shreveport	32.466	93.812	HO	Brick	100,000	50,000	20,000	250	10,000
71109	Shreveport	32.466	93.812	MH	MH	30,000	15,000	6,000	250	3,000
71109	Shreveport	32.466	93.812	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
71109	Shreveport	32.466	93.812	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
71109	Shreveport	32.466	93.812	CO	Brick – 4-story	0	50,000	20,000	250	0
71109	Shreveport	32.466	93.812	RE	Brick – 2-story	0	20,000	5,000	250	0
70427	Bogalusa	30.744	89.877	HO	Frame – 100	100,000	50,000	20,000	250	10,000
70427	Bogalusa	30.744	89.877	HO	Frame – 200	200,000	100,000	40,000	250	20,000
70427	Bogalusa	30.744	89.877	HO	Brick	100,000	50,000	20,000	250	10,000
70427	Bogalusa	30.744	89.877	MH	MH	30,000	15,000	6,000	250	3,000
70427	Bogalusa	30.744	89.877	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
70427	Bogalusa	30.744	89.877	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
70427	Bogalusa	30.744	89.877	CO	Brick – 4 story	0	50,000	20,000	250	0
70427	Bogalusa	30.744	89.877	RE	Brick – 2 story	0	20,000	5,000	250	0
71203	Monroe	32.598	92.018	HO	Frame – 100	100,000	50,000	20,000	250	10,000
71203	Monroe	32.598	92.018	HO	Frame – 200	200,000	100,000	40,000	250	20,000
71203	Monroe	32.598	92.018	HO	Brick	100,000	50,000	20,000	250	10,000
71203	Monroe	32.598	92.018	MH	MH	30,000	15,000	6,000	250	3,000
71203	Monroe	32.598	92.018	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
71203	Monroe	32.598	92.018	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
71203	Monroe	32.598	92.018	CO	Brick – 4 story	0	50,000	20,000	250	0
71203	Monroe	32.598	92.018	RE	Brick – 2 story	0	20,000	5,000	250	0
71303	Alexandria	31.298	92.548	HO	Frame – 100	100,000	50,000	20,000	250	10,000
71303	Alexandria	31.298	92.548	HO	Frame – 200	200,000	100,000	40,000	250	20,000
71303	Alexandria	31.298	92.548	HO	Brick	100,000	50,000	20,000	250	10,000
71303	Alexandria	31.298	92.548	MH	MH	30,000	15,000	6,000	250	3,000
71303	Alexandria	31.298	92.548	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
71303	Alexandria	31.298	92.548	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
71303	Alexandria	31.298	92.548	CO	Brick – 4 story	0	50,000	20,000	250	0
71303	Alexandria	31.298	92.548	RE	Brick – 2 story	0	20,000	5,000	250	0
71457	Natchitoches	31.793	93.073	HO	Frame – 100	100,000	50,000	20,000	250	10,000
71457	Natchitoches	31.793	93.073	HO	Frame – 200	200,000	100,000	40,000	250	20,000
71457	Natchitoches	31.793	93.073	HO	Brick	100,000	50,000	20,000	250	10,000
71457	Natchitoches	31.793	93.073	MH	MH	30,000	15,000	6,000	250	3,000
71457	Natchitoches	31.793	93.073	CP	Ordinary	200,000	100,000	50,000	1,000	20,000
71457	Natchitoches	31.793	93.073	CP	Wind-Resistive	400,000	200,000	100,000	1,000	40,000
71457	Natchitoches	31.793	93.073	CO	Brick – 4 story	0	50,000	20,000	250	0
71457	Natchitoches	31.793	93.073	RE	Brick – 2 story	0	20,000	5,000	250	0

NOTE: HO = Homeowners MH = Mobile Homeowners CP = Commercial Property CO = Condominium RE = Renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT D

Scenario Hurricane Landfall Parameters

	Storm 1	Storm 2	Storm 3	Storm 4	Storm 5	Storm 6	Storm 7	Storm 8	Storm 9
Longitude (deg W)	93.000	93.000	93.000	89.000	89.000	89.000	92.000	82.000	92.000
Latitude (deg N)	29.750	29.750	29.750	29.000	29.000	29.000	29.500	29.500	29.500
Angle of Incidence (deg)	0 (N)	0 (N)	0 (N)	315 (NW)	315 (NW)	315 (NW)	45 (NE)	45 (NE)	45 (NE)
Central Pressure (mb)	925	945	965	925	945	965	925	945	965
Ambient Pressure (mb)	1012	1012	1012	1012	1012	1012	1012	1012	1012
Radius of Maximum Winds (Miles)	10	14	18	10	14	18	10	14	18
Forward Speed (MPH)	10	10	10	10	10	10	10	10	10

NOTE: All hurricane parameters are measured at landfall.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT E.1

Model Loss Estimates Based on Sample Exposure Set for Scenario Hurricanes

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

Zip Code	Type	Exposure Description	Storm 1	Storm 2	Storm 3	Storm 4	Storm 5	Storm 6	Storm 7	Storm 8	Storm 9
70122	HO	Frame - $100,000, 250 ded.	$	$	$	$	$	$	$	$	$
70122	HO	Frame - $200,000, 250 ded.									
70122	HO	Brick - $100,000, 250 ded.									
70122	MH	MH - $30,000, 250 ded.									
70122	CP	Ordinary - $200,000, 1,000 ded.									
70122	CP	Wind-resistive - $400,000, 1,000 ded.									
70122	CO	Brick – 4-story - $50,000, 250 ded.									
70122	RE	Brick – 2-story - $20,000, 250 ded.									
70364	HO	Frame - $100,000, 250 ded.									
70364	HO	Frame - $200,000, 250 ded.									
70364	HO	Brick - $100,000, 250 ded.									
70364	MH	MH - $30,000, 250 ded.									
70364	CP	Ordinary - $200,000, 1,000 ded.									
70364	CP	Wind-resistive - $400,000, 1,000 ded.									
70364	CO	Brick – 4-story - $50,000, 250 ded.									
70364	RE	Brick – 2-story - $20,000, 250 ded.									
70506	HO	Frame - $100,000, 250 ded.									
70506	HO	Frame - $200,000, 250 ded.									
70506	HO	Brick - $100,000, 250 ded.									
70506	MH	MH - $30,000, 250 ded.									
70506	CP	Ordinary - $200,000, 1,000 ded.									
70506	CP	Wind-resistive - $400,000, 1,000 ded.									
70506	CO	Brick – 4-story - $50,000, 250 ded.									
70506	RE	Brick – 2-story - $20,000, 250 ded.									
70605	HO	Frame - $100,000, 250 ded.									
70605	HO	Frame - $200,000, 250 ded.									
70605	HO	Brick - $100,000, 250 ded.									
70605	MH	MH - $30,000, 250 ded.									
70605	CP	Ordinary - $200,000, 1,000 ded.									
70605	CP	Wind-resistive - $400,000, 1,000 ded.									
70605	CO	Brick – 4-story - $50,000, 250 ded.									
70605	RE	Brick – 2-story - $20,000, 250 ded.									
70808	HO	Frame - $100,000, 250 ded.									
70808	HO	Frame - $200,000, 250 ded.									
70808	HO	Brick - $100,000, 250 ded.									
70808	MH	MH - $30,000, 250 ded.									
70808	CP	Ordinary - $200,000, 1,000 ded.									
70808	CP	Wind-resistive - $400,000, 1,000 ded.									
70808	CO	Brick – 4-story - $50,000, 250 ded.									
70808	RE	Brick – 2-story - $20,000, 250 ded.									

NOTE: HO = Homeowners MH = Mobile Homeowners CP = Commercial Property CO = Condominium RE = Renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT E.2

Model Loss Estimates Based on Sample Exposure Set for Scenario Hurricanes

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

Zip Code	Type	Exposure Description	Storm 1	Storm 2	Storm 3	Storm 4	Storm 5	Storm 6	Storm 7	Storm 8	Storm 9
71109	HO	Frame - $100,000, 250 ded.	$	$	$	$	$	$	$	$	$
71109	HO	Frame - $200,000, 250 ded.									
71109	HO	Brick - $100,000, 250 ded.									
71109	MH	MH - $30,000, 250 ded.									
71109	CP	Ordinary - $200,000, 1,000 ded.									
71109	CP	Wind-resistive - $400,000, 1,000 ded.									
71109	CO	Brick – 4-story - $50,000, 250 ded.									
71109	RE	Brick – 2-story - $20,000, 250 ded.									
70427	HO	Frame - $100,000, 250 ded.									
70427	HO	Frame - $200,000, 250 ded.									
70427	HO	Brick - $100,000, 250 ded.									
70427	MH	MH - $30,000, 250 ded.									
70427	CP	Ordinary - $200,000, 1,000 ded.									
70427	CP	Wind-resistive - $400,000, 1,000 ded.									
70427	CO	Brick – 4-story - $50,000, 250 ded.									
70427	RE	Brick – 2-story - $20,000, 250 ded.									
71203	HO	Frame - $100,000, 250 ded.									
71203	HO	Frame - $200,000, 250 ded.									
71203	HO	Brick - $100,000, 250 ded.									
71203	MH	MH - $30,000, 250 ded.									
71203	CP	Ordinary - $200,000, 1,000 ded.									
71203	CP	Wind-resistive - $400,000, 1,000 ded.									
71203	CO	Brick – 4-story - $50,000, 250 ded.									
71203	RE	Brick – 2-story - $20,000, 250 ded.									
71303	HO	Frame - $100,000, 250 ded.									
71303	HO	Frame - $200,000, 250 ded.									
71303	HO	Brick - $100,000, 250 ded.									
71303	MH	MH - $30,000, 250 ded.									
71303	CP	Ordinary - $200,000, 1,000 ded.									
71303	CP	Wind-resistive - $400,000, 1,000 ded.									
71303	CO	Brick – 4-story - $50,000, 250 ded.									
71303	RE	Brick – 2-story - $20,000, 250 ded.									
71457	HO	Frame - $100,000, 250 ded.									
71457	HO	Frame - $200,000, 250 ded.									
71457	HO	Brick - $100,000, 250 ded.									
71457	MH	MH - $30,000, 250 ded.									
71457	CP	Ordinary - $200,000, 1,000 ded.									
71457	CP	Wind-resistive - $400,000, 1,000 ded.									
71457	CO	Brick – 4-story - $50,000, 250 ded.									
71457	RE	Brick – 2-story - $20,000, 250 ded.									

NOTE: HO = Homeowners MH = Mobile Homeowners CP = Commercial Property CO = Condominium RE = Renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT E.3

Model Loss Estimates Based on Sample Exposure Set for Scenario Hurricanes

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

Zip Code	Type	Exposure Decription	Storm 1	Storm 2	Storm 3	Storm 4	Storm 5	Storm 6	Storm 7	Storm 8	Storm 9
AVERAGE	HO	Frame - $100,000, 250 ded.	$	$	$	$	$	$	$	$	$
AVERAGE	HO	Frame - $200,000, 250 ded.									
AVERAGE	HO	Brick - $100,000, 250 ded.									
AVERAGE	MH	MH - $30,000, 250 ded.									
AVERAGE	CP	Ordinary - $200,000, 1,000 ded.									
AVERAGE	CP	Wind-resistive - $400,000, 1,000 ded.									
AVERAGE	CO	Brick – 4-story - $50,000, 250 ded.									
AVERAGE	RE	Brick – 2-story - $20,000, 250 ded.									
AVERAGE	**ALL**	**ALL**	$	$	$	$	$	$	$	$	$

NOTES: For “AVERAGE,” add the loss estimates across all zip codes and divide the total by 10.
For “ALL,” add the average loss estimates by type, then divide the total by 8.
HO = Homeowners MH = Mobile Homeowners CP = Commercial Property CO = Condominium RE = Renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT F

Modeled Losses For Homeowner Exposure

	Modeled Losses for Storms as Defined in Exhibit D					
	Storm 1		Storm 4		Storm 7	
Louisiana Zip Code	$	Percent to Insured Value	$	Percent to Insured Value	$	Percent to Insured Value
•	$	%	$	%	$	%
•						
•						
•						
•						
•						
list						
all valid						
Louisiana						
zip codes						
here						
•						
•						
•						
•						
•						
•						
Statewide Totals	**$**	**100%**	**$**	**100%**	**$**	**100%**

NOTES: Assume only the following Homeowner exposure is in each zip code:

$100,000 Frame Structure $20,000 Time Exposure $10,000 Appurtanent Structures

$ 50,000 Contents Exposure $250 All Peril Deductible

"Percent to Insured Value" is the percent (to 2 decimal places, e.g.1.12%) each zip code's modeled loss is to the exposed insured value of the structure, i.e., (modeled loss/$100,000) * 100.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT G.1

Historical Hurricanes Having Louisiana Coastal Landfall

Date of Landfall	Name of Hurricane	Saffir-Simpson Category

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT G.2

Historical Hurricanes Causing Property Loss in Louisiana

But Whose Landfall Was Not Coastal Louisiana

Date of Landfall	Name of Hurricane	Saffir-Simpson Category

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT H

Historical Hurricane/Landfall Parameters

	Audrey 1957	**Carla 1961**	**Hilda 1964**	**Betsy 1965**	**Camille 1969**	**Florence 1988**	**Hugo 1989**	**Andrew 1992**	**Andrew 1992**	**Opal 1995**	**Georges 1998**
State of Landfall	LA	LA	LA	LA	LA	LA	SC	LA	FL	FL	MS
Latitude (deg N)											
Longitude (deg W)											
Angle of Incidence (deg)											
Central Pressure (mb)											
Ambient Pressure (mb)											
Radius of Maximum Winds (Miles)											
Forward Speed (MPH)											

NOTE: All hurricane parameters are measured at landfall.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT I.1

Model Loss Estimates For Historical Hurricanes

Exposure Base: Modeler's All Industry, All Lines Countrywide Property Exposure Database

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

STATE: ALABAMA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: FLORIDA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: GEORGIA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

NOTES: Losses reflect estimates across all amounts of insurance, all deductibles and all other characteristic for which loss are modeled given the exposures specified in the interrogatories and the hurricanes defined in Exhibit H.
HO = single family dwelling MH = mobile home CP = commercial property CO = condominium RE = renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT I.2

Model Loss Estimates For Historical Hurricanes

Exposure Base: Modeler's All Industry, All Lines Countrywide Property Exposure Database

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

STATE: LOUISIANA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: MISSISSIPPI

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: TEXAS

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

NOTES: Losses reflect estimates across all amounts of insurance, all deductibles and all other characteristic for which loss are modeled given the exposures specified in the interrogatories and the hurricanes defined in Exhibit H.
HO = single family dwelling MH = mobile home CP = commercial property CO = condominium RE = renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT I.3

Model Loss Estimates For Historical Hurricanes

Exposure Base: Modeler's All Industry, All Lines Countrywide Property Exposure Database

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

STATE: ALL OTHER STATES

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: COUNTRYWIDE

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

NOTES: Losses reflect estimates across all amounts of insurance, all deductibles and all other characteristic for which loss are modeled given the exposures specified in the interrogatories and the hurricanes defined in Exhibit H.
HO = single family dwelling MH = mobile home CP = commercial property CO = condominium RE = renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT I.4

Model Loss Estimates For Historical Hurricanes

Exposure Base: LIRC's Standardized Countrywide Property Exposure Database

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

STATE: ALABAMA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: FLORIDA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: GEORGIA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

NOTES: Losses reflect estimates across the exposures given on Part B, Modeler Evaluation, Item 16.b for the hurricanes defined in Exhibit H.
HO = single family dwelling MH = mobile home CP = commercial property CO = condominium RE = renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT I.5

Model Loss Estimates For Historical Hurricanes

Exposure Base: LIRC's Standardized Countrywide Property Exposure Database

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

STATE: LOUISIANA

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: MISSISSIPPI

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: TEXAS

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

NOTES: Losses reflect estimates across the exposures given on Part B, Modeler Evaluation, Item 16.b for the hurricanes defined in Exhibit H.
HO = single family dwelling MH = mobile home CP = commercial property CO = condominium RE = renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT I.6

Model Loss Estimates For Historical Hurricanes

Exposure Base: LIRC's Standardized Countrywide Property Exposure Database

(losses reflect _____ / _____ / _____ cost levels)
MM DD YY

STATE: ALL OTHER

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

STATE: COUNTRYWIDE

Structure Type	Audrey 1957	Carla 1961	Hilda 1964	Betsy 1965	Camille 1969	Florence 1988	Hugo 1989	Andrew 1992 (LA)	Andrew 1992 (FL)	Opal 1995	Georges 1998
HO	$	$	$	$	$	$	$	$	$	$	$
MH											
CP											
CO											
RE											
All Types											

NOTES: Losses reflect estimates across the exposures given on Part B, Modeler Evaluation, Item 16.b for the hurricanes defined in Exhibit H.
HO = single family dwelling MH = mobile home CP = commercial property CO = condominium RE = renters

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT J

Historical Release and Revision Summary

DATE	RELEASE REFERENCE	BRIEF DESCRIPTION

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT K

Profile of Technical Staff

NAME: _____

TITLE: _____

EXPERIENCE: _____

RESPONSIBILITIES: _____

_____

EDUCATION: _____

****

NAME: _____

TITLE: _____

EXPERIENCE: _____

RESPONSIBILITIES: _____

_____

EDUCATION: _____

****

NAME: _____

TITLE: _____

EXPERIENCE: _____

RESPONSIBILITIES: _____

_____

EDUCATION: _____

****

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT L.1

Central Pressures at Louisiana Landfall

Central Pressure	Counts	Percent Probability
000 – 900 mb		
901 – 910 mb		
911 – 920 mb		
921 – 930 mb		
931 – 940 mb		
941 – 950 mb		
951 – 960 mb		
961 – 970 mb		
971 – 980 mb		
981+ mb		
TOTAL		**100%**

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT L.2

Radius of Maximum Winds at Louisiana Landfall

Radius	Counts	Percent Probability
0 – 4 Miles		
5 – 10 Miles		
11 – 20 Miles		
21 – 30 Miles		
31 – 40 Miles		
41 – 50 Miles		
51 – 60 Miles		
61+ Miles		
TOTAL		**100%**

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT L.3

Forward Speeds at Louisiana Landfall

Speed	Counts	Percent Probability
0 – 2.5 mph		
2.6 – 5.0 mph		
5.1 – 7.5 mph		
7.6 – 10.0 mph		
10.1 – 12.5 mph		
12.6 – 15.0 mph		
15.1 – 17.5 mph		
17.6 – 20.0 mph		
20.1+ mph		
TOTAL		**100%**

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT L.4

Decay Rate Over Constant Average Land Roughness

Elapsed Time	Maximum Wind Speed (MPH)	Percent of Wind Speed at Landfall
Landfall	150	100%
2 hours		
4 hours		
6 hours		
8 hours		
10 hours		
12 hours		
14 hours		
16 hours		
18 hours		
20 hours		
22 hours		
24 hours		
26 hours		
28 hours		
30 hours		
32 hours		
34 hours		
36 hours		
38 hours		
40 hours		
42 hours		
44 hours		
46 hours		
48 hours		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT L.5

Annual Probabilities of Modeled Hurricanes By Coastal Parish

	Saffir-Simpson Classification					Total
	5	4	3	2	1	
100 miles west of Louisiana						
Cameron						
Vermillion						
Iberia						
St. Mary						
Terrebonne						
Lafourche						
Jefferson						
Plaquemines						
St. Bernard						
St. Tammany						
100 miles east of Louisiana						
TOTAL						

NOTE: Use four decimals for displayed probabilities, e.g., .0219.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT L.6

Annual Frequency of Actual Hurricanes From 1900 to 1998 By Coastal Parish

Landfall	Saffir-Simpson Classification					Total
	5	4	3	2	1	
100 miles west of Louisiana						
Cameron						
Vermillion						
Iberia						
St. Mary						
Terrebonne						
Lafourche						
Jefferson						
Plaquemines						
St. Bernard						
St. Tammany						
100 miles east of Louisiana						
TOTAL						

Number of Actual Hurricanes From 1900 to 1998 By Coastal Parish

Landfall	Saffir-Simpson Classification										Total
	5		4		3		2		1		
	Number	%	Number	%	Number	%	Number	%	Number	%	
100 miles west of Louisiana											
Cameron											
Vermillion											
Iberia											
St. Mary											
Terrebonne											
Lafourche											
Jefferson											
Plaquemines											
St. Bernard											

St. Tammany											
100 miles east of Louisiana											
TOTAL											

NOTE: Use four decimals for displayed probabilities, e.g., .0219. "%" is the percent of the cell to the total; use two decimals to display percentages, e.g., 11.17%.

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT M.1

Louisiana Probable Maximum Loss and Statistics

Modeler's All Industry, All Lines Exposure Base

Table 1

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 2

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

Table 3

Hurricane Deductible	Estimated Mean Loss Elimination Ratio
NONE	**0.0000**
$250	
$500	
$1,000	
1% Coverage A	
2% Coverage A	
5% Coverage A	

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT M.2

Louisiana Probable Maximum Loss and Statistics

Louisiana Standardized Exposure Base

Table 1

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 2

[3]

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

Table 3

Hurricane Deductible	Estimated Mean Loss Elimination Ratio
NONE	**0.0000**
$250	
$500	
$1,000	
1% Coverage A	
2% Coverage A	
5% Coverage A	

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT N

COMPARISON OF ACTUAL INCURRED LOSS TO MODEL ESTIMATED INCURRED LOSS FOR SELECTED HURRICANES

HURRICANE AND DATES	LINE	ACTUAL INSURED INCURRED LOSS	ESTIMATED INSURED INCURRED LOSS
1. Name: _____ Date of Landfall: _____ Date of Model Estimate: _____	_____ _____ _____ _____	$_____ _____ _____ _____	$_____ _____ _____ _____
	ALL Lines	$	$
2. Name: _____ Date of Landfall: _____ Date of Model Estimate: _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____
	ALL Lines	$	$
3. Name: _____ Date of Landfall: _____ Date of Model Estimate: _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____
	ALL Lines	$	$
4. Name: _____ Date of Landfall: _____ Date of Model Estimate: _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____
	ALL Lines	$	$
5. Name: _____ Date of Landfall: _____ Date of Model Estimate: _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____
	ALL Lines	$	$

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT O.1

Sensitivity to Change in Central Pressure Distribution

Louisiana Standardized Exposure Base

Table 1

Central Pressure	Source: Exhibit L.1 Distribution		Exhibit L.1 Distribution Shifted DOWNWARD 10 mb	
	Counts	Percent Probability	Counts	Percent Probability
000 – 900 mb				
901 – 910 mb				
911 – 920 mb				
921 – 930 mb				
931 – 940 mb				
941 – 950 mb				
951 – 960 mb				
961 – 970 mb				
971 – 980 mb				
981+ mb				
TOTAL				

Table 2

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 3

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT O.2

Sensitivity to Change in Central Pressure Distribution

Louisiana Standardized Exposure Base

Table 1

Central Pressure	Source: Exhibit L.1 Distribution		Exhibit L.1 Distribution Shifted UPWARD 10 mb	
	Counts	Percent Probability	Counts	Percent Probability
000 – 900 mb				
901 – 910 mb				
911 – 920 mb				
921 – 930 mb				
931 – 940 mb				
941 – 950 mb				
951 – 960 mb				
961 – 970 mb				
971 – 980 mb				
981+ mb				
TOTAL				

Table 2

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 3

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT O.3

Sensitivity to Change in Radius of Maximum Winds Distribution

Louisiana Standardized Exposure Base

Table 1

Radius	Source: Exhibit L.2 Distribution		Exhibit L.2 Distribution Shifted DOWNWARD 5 miles	
	Counts	Percent Probability	Counts	Percent Probability
0 – 4 Miles				
5 – 10 Miles				
11 – 20 Miles				
21 – 30 Miles				
31 – 40 Miles				
41 – 50 Miles				
51 – 60 Miles				
61+ Miles				
TOTAL				

Table 2

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 3

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT O.4

Sensitivity to Change in Radius of Maximum Winds Distribution

Louisiana Standardized Exposure Base

Table 1

Radius	Source: Exhibit L.2 Distribution		Exhibit L.2 Distribution Shifted UPWARD 5 miles	
	Counts	Percent Probability	Counts	Percent Probability
0 – 4 Miles				
5 – 10 Miles				
11 – 20 Miles				
21 – 30 Miles				
31 – 40 Miles				
41 – 50 Miles				
51 – 60 Miles				
61+ Miles				
TOTAL				

Table 2

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 3

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT O.5

Sensitivity to Change in Radius of Forward Speeds Distribution

Louisiana Standardized Exposure Base

Table 1

Forward Speeds	Source: Exhibit L.3 Distribution		Exhibit L.3 Distribution Shifted DOWNWARD 5 mph	
	Counts	Percent Probability	Counts	Percent Probability
0 – 2.5 mph				
2.6 – 5.0 mph				
5.1 – 7.5 mph				
7.6 – 10.0 mph				
10.1 – 12.5 mph				
12.6 – 15.0 mph				
15.1 – 17.5 mph				
17.6 – 20.0 mph				
20.1+ mph				
TOTAL				

Table 2

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 3

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

EXHIBIT O.6

Sensitivity to Change in Radius of Forward Speeds Distribution

Louisiana Standardized Exposure Base

Table 1

Forward Speeds	Source: Exhibit L.3 Distribution		Exhibit L.3 Distribution Shifted UPWARD 5 mph	
	Counts	Percent Probability	Counts	Percent Probability
0 – 2.5 mph				
2.6 – 5.0 mph				
5.1 – 7.5 mph				
7.6 – 10.0 mph				
10.1 – 12.5 mph				
12.6 – 15.0 mph				
15.1 – 17.5 mph				
17.6 – 20.0 mph				
20.1+ mph				
TOTAL				

Table 2

Return Time (Years)	Louisiana Estimated Loss Single Occurrence
Top Event	
10,000	
5,000	
1,000	
500	
250	
100	
50	
20	
5	

Table 3

Estimate Statistic	Louisiana Annual Aggregate	Louisiana Single Occurrence
Mean		
Median		
Maximum		

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

APPENDIX A

ELECTRONIC FORMAT SPECIFICATION

Data requested on Exhibits E and F may be provided in hard copy but must be provided in electronic format as defined in this Appendix.

Data should be provided on either a 3½ high density diskette or a CD-ROM. The requested file format is ASCII file format with comma delimiters as defined in the following pages.

Data for each exhibit should be labeled as follows:

INTERROGATORY EXHIBIT	ASCII FORMAT FILE NAME	MS EXCEL '97 FORMAT FILE NAME
E	LAEXE.ASC	LAEXE.XLS
F	LAEXF.ASC	LAEXF.XLS

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

APPENDIX A

ELECTRONIC FORMAT SPECIFICATION FOR EXHIBIT E

ASCII FILE LAYOUT

FIELD	DESCRIPTION	DATA TYPE
1	Zip Code	Integer
2	Exposure Description	Character
3	Storm Code	Integer
4	Loss Estimate	Number

NOTES:

Field 1: Restrict to 5 digits; for "Average" Code 99999

Field 2:

CODE	DESCRIPTION
F1	**Homeowners, Frame Construction, $100,000 value, $250 ded.**
F2	**Homeowners, Frame Construction, $200,000 value, $250 ded.**
B1	**Homeowners, Brick Construction, $100,000 value, $250 ded.**
B2	**Condominium, Brick, 4-story, $50,000 value, $250 ded.**
B3	**Renters, Brick, 2-story, $20,000 value, $250 ded.**
M	**Mobile Homes, $30,000 value, $250 ded.**
C1	**Commercial Property, ordinary construction, $200,000 value, $1,000 ded.**
C2	**Commercial Property, wind-resistive construction, $400,000 value, $1,000 ded.**
ALL	**All Exposure Types Combined**

Field 3: Code 1 through 9 per Exhibit D

Field 4: Round to zero decimals

LOUISIANA INSURANCE RATING COMMISSION

COMPUTER MODEL INTERROGATORIES

APPENDIX A

ELECTRONIC FORMAT SPECIFICATION FOR EXHIBIT F

ASCII FILE LAYOUT

FIELD	DESCRIPTION	DATA TYPE
1	Zip Code	Integer
2	Storm Code	Number
3	Loss Estimate	Number
4	Percent to Insured Value	Percent

NOTES:

Field 1: Restrict to 5 digits; for "Statewide Totals" Code 99999

Field 2: Code as 1, 4 or 7 per Exhibit D

Field 3: Round to zero decimals

Field 4: Code as true percent, e.g., value .0153 is coded as 1.53; round to two decimals

Assume the following single exposure is in each zip code:

- **Homeowner policy**
- **Frame construction**
- **$100,000 coverage A**
- **$50,000 contents coverage**
- **$20,000 time coverage**
- **$10,000 appurtenant structures coverage**
- **$250 deductible**